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ABSTRACT

Faculty members (n=26) in an education personnel preparation program at a Southeastern university were surveyed regarding their modeling of technology use in their courses. Results indicated that faculty are: (1) incorporating software packages into the teaching of their subject areas; (2) using assistive technology (e.g., scanner, digital cameras, voice recognition) to develop and deliver instructional units in their teaching areas; (3) using technology (e.g., video conferencing) to teach students; and (4) using the Internet to gather resources (e.g., lesson plans for teaching in their subject areas). However, faculty are not using projection devices with a computer to develop and deliver instructional materials in their teaching areas. Results are discussed in terms of recommendations of the National Council for the Accreditation of Teacher Education and the standards developed by the Council for Exceptional Children. (DB)

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HIGHER EDUCATION AND TECHNOLOGY INTEGRATION INTO THE LEARNING ENVIRONMENT: RESULTS OF A SURVEY OF TEACHER PREPARATION FACULTY

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Higher Education and Technology Integration into the Learning Environment: Results of a Survey of Teacher Preparation Faculty

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Abstract: Standards delineated by the Council for Exceptional Children (CEC) include competencies in technology that promote teacher development of a supportive technological learning environment for students with disabilities. Personnel preparation programs must demonstrate in courses and field experiences that technology use is incorporated in the learning environment. This study presents preliminary analysis results of a survey to determine faculty technology use in educator preparation courses. The data presented are part of a larger study of technology learning environments in a teacher preparation program. Results indicate that faculty do not model all types of technology use within the learning environment of educator preparation courses.

Introduction

The National Council for the Accreditation of Teacher Education (NCATE) adopted technology competencies as a required component for training all teachers. Standards delineated by the Council for Exceptional Children (CEC) include competencies in technology that promote teacher development of a supportive technological learning environment for students with disabilities. Personnel preparation programs must demonstrate in courses and field experiences that technology use is incorporated in the learning environment. Gillingham and Topper (1999) discussed four possible delivery approaches to preparing teachers for technology use in classrooms: single course, technology infusion, student performance, and case based. Ludlow (2001), in a review of the literature and discussion of technology and teacher education, notes that research indicates a need for better training. This need is based on research and reports that indicate (a) preservice program faculty do not model the use of technology, (b) faculty do not facilitate its implementation in activities and coursework, (c) future special educators are more likely to use technology competently if it has been embedded throughout their coursework and field experiences, (c) technology competencies are often "add ons" rather than integrated into coursework, (d) few faculty members have the expertise to develop complex technology mediated instruction, (e) faculty lack the skills for troubleshooting technical problems during instructional interactions, (f) research in the area of making informed programming decisions related to technology is lacking, and (g) systematic training procedures to assist faculty and students in using new technologies have yet to be developed.

Edyburn (2001) delineated 197 articles that have contributed to an emerging knowledge base on special education technology research and practice. Content analysis identified several themes but most relevant to this study were the areas of implementation issues, preservice teacher education, and technology integration. In a review and discussion of instructional technology and personnel preparation for early childhood special education, major issues were identified within the context of higher education. Illustrations for faculty to examine their own instructional strategies within technology use were presented. Self-examination areas included online materials, electronic reserve, electronic mail, listservs/reflectors, online forums, electronic presentations and face-to-face instruction (Hains, et al, 2000).

Method

Using a survey of education personnel preparation faculty, the investigators addressed the question: Do faculty model technology use in the courses they teach? Faculty were invited to complete the survey at the end of a program area meeting. A script describing the study was read by one of the investigators requesting that surveys be completed after the meeting and returned anonymously.

Participants

A total of 26 faculty members at an upper division university in the Southeast region of the United States constituted the sample for this survey. Response was 100 % of faculty attending program area meetings. Participants were all full time faculty members in an education personnel preparation program.

Measures

This study used the Technology Integration Survey for Faculty (High Plains Regional Technology in Education Consortium, 2001). For the purposes of this study, only the first 16 items were analyzed. These 16 items are designed to gather information on the degree of technology integration the faculty is incorporating into their teaching and are directly related to the question of whether faculty model the use of technology in their courses. Responses are evaluated on a 4-point Likert-type scale with the following labels: (1) strongly disagree, (2) somewhat disagree, (3) somewhat agree, and (4) strongly agree. The following is taken from the directions on the survey:

> **Directions**: This survey is designed to gather information on the degree of technology integration you are currently incorporating in your teaching. The statements address what you are actually *doing*, rather than what you *can* do.
>
> Use the following scale to gauge the degree to which each statement is true of you:
>
> **1 Strongly disagree** (You have never tried this, either because you are not comfortable with the technology or because you believe it is not appropriate in your teaching situation or because you don't have access to the necessary technology.)
>
> **2 Somewhat disagree** (You've tried this once or twice but it has not become a consistent part of your instruction.)
>
> **3 Somewhat agree** (You do this consistently to some degree but it is not an integral part of your instruction.)
>
> **4 Strongly agree** (This is a consistent, integral part of your instruction.)
> (High Plains Regional Technology in Education Consortium, 2001, paragraphs 1 & 2)

Results

The results of the study are similar to those identified in the literature: faculty (a) are incorporating software packages into the teaching of their subject areas; (b) are using assistive technology (e.g., scanner, digital cameras, video cameras, voice recognition) to develop and deliver instructional units in their

teaching areas; (c) are using technology (e.g., video conferencing) to teach students; (d) are using the internet to gather resources (e.g., lesson plans) for teaching in their subject areas. However, faculty are not using projection devices with a computer to develop and deliver instructional materials in their teaching areas. The following table summarizes the results of the study.

Table 1: Samples of Faculty Responses by Technology Use

Technology Use	Response	Frequency	Percent
Use of spreadsheet applications	Strongly disagree	8	30.8
	Somewhat disagree	6	23.1
	Somewhat agree	5	19.2
	Strongly agree	7	26.9
Use of scanner, video/digital cameras	Strongly disagree	20	76.9
	Somewhat disagree	4	15.4
	Somewhat agree	1	3.8
	Strongly agree	1	3.8
Use of multimedia and/or Internet	Strongly disagree	12	46.2
	Somewhat disagree	9	34.6
	Somewhat agree	0	0
	Strongly agree	5	19.2

When the participants answered whether they use a variety of software packages to teach in their subject area, 38.5% of the participants stated that they do not use software packages. Similarly, 53.8% of the surveyed faculty stated that they do not use spreadsheet application when teaching. When asked about their use of a scanner to develop and deliver instruction, 76% of the participants answered as not doing so. Of those surveyed, 84.6% stated that they do not use digital cameras to enhance their teaching. Similarly, 92.3% of the participants indicated not using video cameras to develop and deliver their teaching. In relation to the use of assistive technology to promote learning for students with special needs, 88.5% of the participants indicated that they do not use such technology. Of those surveyed, 80% indicated that they do not use technology for distance education and 92.3% stated that they do not use video conferencing to teach in their subject areas. When asked about their use of projection devices, word processing, and use of multimedia, 53.8%, 88.5%, and 69.2% of the participants, respectively, agreed to incorporating them into their teaching. Similarly, 88.4% of the participants agreed to using the Internet in an informed manner and 69.3% agreed that they used lesson plans and other resources published on the web in their teaching.

Convenience sample, sample size, and the use of self-report data limit the findings of this study. However, results are consistent with research findings that preservice program faculty do not model the use of technology and that faculty therefore do not facilitate its implementation in activities and coursework. This lack of technology use is contrary to recommendations that future special educators are more likely to use technology competently if it has been embedded throughout their coursework and field experiences.

Discussion

Technology integration to provide a supportive classroom learning environment has been discussed as an evaluation tool of an educator's ability to address the individualized needs of students (Crawford & Martin, 2001) as well as a critical component in the success of learners with disabilities (Seevers, Crawford, & Martin, 2001). University faculty teaching personnel preparation courses should be modeling the integration of technology for their university students. Research has indicated that effective technology integration may be critical to producing educators who use technology competently to meet the needs of their students through a supportive classroom environment. Additionally, implications related NCATE recommendations and CEC standards for providing a supportive learning environment for students remain an area of concern.

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This study used a survey questionnaire to determine whether faculty model the use of technology in educator preparation courses. It measured faculty use of technology not faculty knowledge of technology. It is possible that there is a discrepancy between knowledge and use of technology. Faculty may know more technology than they incorporate into their education personnel preparation courses. Results of this study indicate that some faculty (a) are not incorporating software packages into the teaching of their subject areas; (b) are not using assistive technology (e.g., scanner, digital cameras, video cameras, voice recognition) to develop and deliver their instructional units in their teaching areas; (c) are not using technology (e.g., video conferencing) to teach to their students; (d) are not using the internet to gather resources (e.g., lesson plans) for teaching in their subject areas; and that some faculty (e) are not using projection devices with a computer to develop and deliver instructional materials in their teaching areas. Additionally, the use of the survey questionnaire may have resulted in faculty self-assessing their use of technology in educator preparation course.

Conclusion

Due to faculty responses to the survey, further consideration pertaining to faculty professional development opportunities and curricular integration is imperative. After all, "Computerized electronic technology makes possible not only the wide and rapid distribution of information, but its manipulation, analysis, synthesis, and recombination as well. Through these operations, new knowledge is created that helps us understand ourselves and our world in new ways" (Gibbon, 1987, p. 2). Technology provides the opportunity to expand the realm of the curriculum, but only with faculty time and effort, as well as support of the institution, will appropriate and successful integration occur.

Perhaps consideration allocated toward the philosophical framework through which the faculty view their own pedagogical behaviors. A traditional mode of interaction within a classroom environment is one that is supportive. However, a supportive environment that celebrates the successes of the faculty may be described as one in which innovative approaches to teaching are perceived as inventive and appropriately rewarded. "A combination of essential conditions is required for teachers to create learning environments conducive to powerful uses of technology. The most effective learning environments meld traditional approaches and new approaches to facilitate learning of relevant content while addressing individual needs: (International Society for Technology in Education, 2001, paragraph 1).

As university faculty shift toward an integration of technology within their university courses, the modeling of technology use for university students will contribute to the production of education personnel who are competent technology users. This shift may provide the supportive learning environment necessary for education personnel to understand the importance of not only having pedagogical expertise but also of modeling its use through technology (Crawford & Martin, 2001).

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